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09/721,469	11/22/2000	Takeshi Yamaguchi	55409/70904	3073

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EXAMINER	
LE, KIMLIEN T	

ART UNIT	PAPER NUMBER
2653	7

DATE MAILED: 03/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/721,469	YAMAGUCHI ET AL.	
	Examiner	Art Unit	
	Kimlien T Le	2653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-2,4-5,7-11 and 13-18* is/are rejected.

7)☒ Claim(s) *3,6 and 12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 November 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5,6*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

Figures 8-9 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2,4-5,7-11 and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonemitsu et al (U.S. Patent 5,617,384) in view of Yonezawa et al (U.S. Patent 4, 703, 408).

Regarding claims 1, Yonemitsu et al shows a recording method for an optical disk, which is used for an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals and a recording area for recording data of a predetermined number of units n (n: natural number) is placed between the concave and convex areas, comprising the steps of: forming a first two-dimensional

array by adding addition data to input data (Fig. 21; See also column 6, lines 50-62); forming a second two-dimensional array in which the length of each row is set to m (m: natural number) with a X m = b X n (a, b: natural numbers) being satisfied, by carrying out a plurality of error-correction encoding processes, including at least an error-correction encoding process that forms a code sequence by using a data alignment in a diagonal direction of the first two-dimensional array, on the first two-dimensional array (Figs. 17 and 18; See also column 17, line 40- column 18, line 65); and successively sending data on each row in the second two-dimensional array so that all the data in the second two-dimensional array is recorded on the recording area on the optical disk (Figs. 17 and 18; See also column 17, line 40- column 18, line 65). Yonesmitsu et al does not show an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals. However, Yonezawa et al teaches an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals (Fig. 1; See also column 1, lines 52 -62). Therefore, it would have been obvious to provide Yonemitsu et al with the optical disk as taught by Yonezawa et al. The rationale is as follows: one of ordinary skill in the art at the time of the invention would have been motivated to provide Yonemitsu et al with the optical disk as taught by Yonezawa et al, in order to write data successively into track.

Regarding claim 2, see Figs. 3-18 and 21 of Yonemitsu et al which show a recording method for an optical disk as defined in claim 1, wherein an addition code having a length satisfying the equation a X m= b X n (a, b: natural numbers) in the second two-dimensional array

is added to each row of the second two-dimensional array (Figs. 17 and 18; See also column 17, line 40- column 18, line 65).

Regarding claim 4, see Figs. 3-18 and 21 of Yonemitsu et al which show a recording method for an optical disk, which is used for an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals and a recording area for recording data of a predetermined number of units n (n: natural number) is placed between the concave and convex areas arranged with constant intervals, comprising the steps of: forming a first two-dimensional array by adding addition data to input data; forming a third two-dimensional array having the number of data contained in one row that does not exceed (Figs. 17 and 18; See also column 17, line 40- column 18, line 65).

Regarding claim 5, see Figs. 3-18 and 21 of Yonemitsu et al which show a recording method for an optical disk as defined in claim 4, wherein an addition code having a length satisfying the equation a X m=b X n (a, b: natural numbers) in the second two-dimensional array is added to each row of the second two-dimensional array (Figs. 17 and 18; See also column 17, line 40- column 18, line 65).

Regarding claim 7, see Figs. 3-18 and 21 of Yonemitsu et al which show a recording method for an optical disk, which is used for an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals and a recording area for recording data of a predetermined number of units n (n: natural number) is placed between the concave and convex areas arranged, comprising the steps of: forming a first two-dimensional array by adding addition data to input data; forming a second two-dimensional array by carrying out a single error-correction encoding process or a

plurality of error-correction encoding processes which form code sequences by using data alignments in respectively different directions of the first two-dimensional array on the first two-dimensional array; and successively sending data on the respective rows in the second two-dimensional array while exchanging the data so as to record a parity generated in at least any one of the error-encoding processes on a portion adjacent to the concave and convex areas in the recording area, thereby recording all the data in the second two-dimensional array on the recording area on the optical disk (Figs. 17 and 18; See also column 17, line 40- column 18, line 65).

Regarding claim 8, see Figs. 3-18 and 21 of Yonemitsu et a lwhich show a recording method for an optical disk as defined in claim 7, further comprising the step of: carrying out on the first two-dimensional array a plurality of error-correcting encoding processes including an error-correction encoding process that forms a code sequence by using a data alignment in a recording direction of data onto the optical disk in the second two-dimensional array, wherein a parity, which has been generated in an error-correction encoding process that forms a code sequence by using a data alignment in a recording direction of data on the optical disk in the second two-dimensional array, is recorded on the portion adjacent to the concave and convex areas in the recording area (Figs. 17 and 18; See also column 17, line 40- column 18, line 65).

Regarding claim 9, see Figs. 3-18 and 21 of Yonemitsu et al which show a recording method for an optical disk as defined in claim 7, further comprising the step of: carrying out a plurality of error-correcting encoding processes on the first two-dimensional array, wherein a parity, formed by the error-correction encoding process having a short minimum distance of codes among the plurality of error encoding processes, is preferentially recorded on the portion

adjacent to the concave and convex areas in the recording area (Figs. 17 and 18; See also column 17, line 40- column 18, line 65).

Regarding claim 10, see Figs. 3-18 and 21 of Yonemitsu et al which show a recording method for an optical disk as defined in claim 7, wherein the second two-dimensional array has a length of each row that is set to m (m: natural number), with a X m = b X n (a, b: natural numbers) being satisfied (Figs. 17 and 18; See also column 17, line 40- column 18, line 65).

Regarding claim 11, see Figs. 3-18 and 21 of Yonemitsu et al which show a recording method for an optical disk as defined in claim 10, wherein an addition code having a length satisfying the equation a X m =b X n (a, b: natural numbers) in the second two-dimensional array is added to each row of the second two-dimensional array (Figs. 17 and 18; See also column 17, line 40- column 18, line 65).

Regarding claim 13, see Figs. 3-18 and 21 of Yonemitsu et al which show an optical disk recording apparatus, which records information on an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals and a recording area for recording data of a predetermined number of units n (n: natural number) is placed between the concave and convex areas, comprising: encoding means (Fig. 1, element 122; See also column 6, lines 40-65) for forming a first two-dimensional array by adding addition data to input data, for carrying out a plurality of error-correction encoding processes on the first two-dimensional array, the encoding processes including at least an error-correction encoding process that forms a code sequence by using a data alignment in a diagonal direction of the first two-dimensional array, and for forming a second two-dimensional array in which the length of each row is set to m (m: natural number)

with a X m = b X n (a, b: natural numbers) being satisfied; modulation means (Fig. 1, element 140; See also column 6, lines 40-65) for successively modulating data in each row in the second two-dimensional array; and recording means (Fig. 2 , element 212; See also column 6, line 40- column 8, line 65) for recording the modulated data on the recording area of the optical disk (Figs. 17 and 18; See also column 17, line 40- column 18, line 65).

Regarding claim 14, see Figs. 3-18 and 21 of Yonemitsu et al which show an optical disk recording apparatus, which records information on an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track and a recording area for recording data of a predetermined number of units n (n: natural number) is placed between the concave and convex areas arranged with constant intervals, comprising: encoding means (Fig. 1, element 122; See also column 6, lines 40-65) for forming a first two-dimensional array by adding addition data to input data, for carrying out a single error-correction encoding process or a plurality of error-correction encoding processes which form code sequences by using data alignments in respectively different directions of the first two-dimensional array on the first two-dimensional array so that a second two dimensional array is formed; modulation means (Fig. 1, element 140; See also column 6, lines 40-65) for carrying out a data modulation while exchanging the data so as to record a parity generated in at least any one of the error-encoding processes on a portion adjacent to the concave and convex areas in the recording area; and recording means (Fig. 2 , element 212; See also column 6, line 40- column 8, line 65) for recording the modulated data on the recording area of the optical disk (Figs. 17 and 18; See also column 17, line 40- column 18, line 65).

Regarding claim 15, see Figs. 3-18 and 21 of Yonemitsu et al which show an optical disk reproducing apparatus, which reproduces information from an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track and a recording area for recording data of a predetermined number of units n (n: natural number) is placed between the concave and convex areas, the optical disk being provided with an arrangement in which: a first two-dimensional array is formed by adding addition data to input data, a plurality of error-correction encoding processes, including at least an error-correction encoding process that forms a code sequence by using a data alignment in a diagonal direction of the first two-dimensional array, are carried out on the first two-dimensional array, a second two-dimensional array a in which the length of each row is set to m (m: natural number) with a X m = b X n (a, b : natural numbers) being satisfied is formed, and data on each row in the second two-dimensional x= array is sent so that all the data in the second two-dimensional array is recorded on the recording area on the optical disk, comprising: reproducing means (Fig. 2 , element 212; See also column 6, line 40- column 8, line 65) for reading data from the recording area; demodulation means (Fig. 2 , element 215; See also column 9, lines 5-10) for demodulating data read by the reproducing means; arranging means (Figs. 2, element 221; See also column 9, lines 5-10) for arranging the demodulated data from the demodulation means into the second two-dimensional array; and (Figs. 17 and 18; See also column 17, line 40- column 18, line 65).

Regarding claim 16, see Figs. 3-18 and 21 of Yonemitsu et al which show an optical disk reproducing apparatus, which reproduces information from an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track and a recording area for recording data of a predetermined number of units n (n: natural

number) is placed a between the concave and convex areas arranged with constant intervals, the optical disk being provided with an arrangement in which: a first two-dimensional array is formed by adding addition data to input data, a single a error correction encoding process or a plurality of error correction encoding processes which form code sequences by using data alignments in respectively different directions of the first two-dimensional array on the first two-dimensional array are carried out so that a second two-dimensional array is formed, and data is successively recorded while exchanging the data in each row in the second two-dimensional array so as to record a parity generated in at least any one of the error encoding processes on a portion adjacent to the concave and convex areas in the recording area, comprising:
reproducing means (Fig. 2 , element 212; See also column 6, line 40- column 8, line 65) for reading data from the recording area; demodulation means (Fig. 2 , element 215; See also column 9, lines 5-10) for demodulating data read by the reproducing means;
arranging means (Figs. 2, element 221; See also column 9, lines 5-10) for successively arranging the demodulated data from the demodulation means into the second two-dimensional array, while exchanging positions of the parities; and decoding means (Figs. 33, element 260; See also column 30, lines 15-20) for carrying out decoding processes on the error correction encoding processes with respect to the data arranged in the second two-dimensional array .

Regarding claim 17, see Figs. 3-18 and 21 of Yonemitsu et al which show an optical disk, comprising: concave and convex areas that are formed as concave and convex sections on the disk substrate and arranged along a track; and a recording area for recording data of a predetermined number of units n (n: natural number) that is placed between the concave and convex areas, wherein: a first two-dimensional array is formed by adding addition data to input

data, a plurality of error-correction encoding processes, including at least an error-correction encoding process that forms a code sequence by using a data alignment in a diagonal direction of the first two-dimensional array, are carried out on the first two-dimensional array so that a second two dimensional array in which the length of each row is set to m (m: natural number) with a X m = b X n (a, b: natural numbers) being satisfied is formed, and data on each row in the second two-dimensional array is successively recorded in the second two-dimensional array so that all the data in the second two-dimensional array is recorded on the recording area on the optical disk(Figs. 17 and 18; See also column 17, line 40- column 18, line 65).

Regarding claim 18, see Figs. 3-18 and 21 of Yonemitsu et al which show an optical disk, comprising: concave and convex areas that are formed as concave and convex sections on the disk substrate, and arranged along a track with constant intervals; and a recording area for recording data of a predetermined number of units n (n: natural number) that is placed between the concave and convex areas arranged with constant intervals, wherein: a first two-dimensional array is formed by adding addition data to input data, a single error correction encoding process or a plurality of error correction encoding processes which form code sequences by using data alignments in respectively different directions of the first two-dimensional array on the first two-dimensional array are carried out so that a second two dimensional array is formed, and data is successively recorded while exchanging the data in each row in the second two-dimensional array so as to record a parity generated in at least any one of the error-encoding processes on a portion adjacent to the concave and convex areas in the recording area, so that all the data in the second two dimensional array is recorded(Figs. 17 and 18; See also column 17, line 40- column 18, line 65).

Allowable Subject Matter

Claims 3, 6 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

In claim 3, the limitation of the recording method for an optical disk, supposing that the number of data related to one logical sector is 1 byte (1: natural number greater than m) , 1 = c X m (c: natural number) is satisfied and supposing that the minimum combination of a and b that satisfies a X m = b X n are a_{min} and b_{min}, a_{min} is set to a divisor of c that is smaller than c, taken in conjunction with the limitations of claim 1, is not anticipated by, nor made obvious, over the prior art of record.

In claim 6, the limitation of the recording method for an optical disk, supposing that the number of data related to one logical sector is 1 byte (l: natural number greater than m), 1 = c X m (c: natural number) is satisfied and supposing that the minimum combination of a and b that satisfies a X m = b X n are a_{min} and b_{min}, a_{min} is set to a divisor of c that is smaller than c, taken in conjunction with the limitations of claim 4, is not anticipated by, nor made obvious, over the prior art of record.

In claim 12, the limitation of the recording method for an optical disk, supposing that the number of data related to one logical sector is 1 byte (1: natural number greater than m), 1 = c X m (c: natural number) is satisfied and supposing that the minimum combination of a and b that satisfies a X m = b X n are a_{min} and b_{min}, a_{min} is set to a divisor of c that is smaller than c, taken in

conjunction with the limitations of claim 10, is not anticipated by, nor made obvious, over the prior art of record.

Cited References

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited references are all related to an optical disk apparatus, method and an optical disk.

Points of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimlien T Le whose telephone number is 703 305 3498. The examiner can normally be reached on M-F 8a.m-5p.m

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on 703 305 6137. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kimlien Le
March 18, 2004

TAN DINH
PRIMARY EXAMINER